CASE HISTORY

Rev:01, Date : 14.05.2020

REINFORCED SOIL WALLS AND SLOPE PROTECTION MEASURES AT STATUE OF UNITY, GUJARAT

GUJARAT, INDIA

TECHFAB INDIA

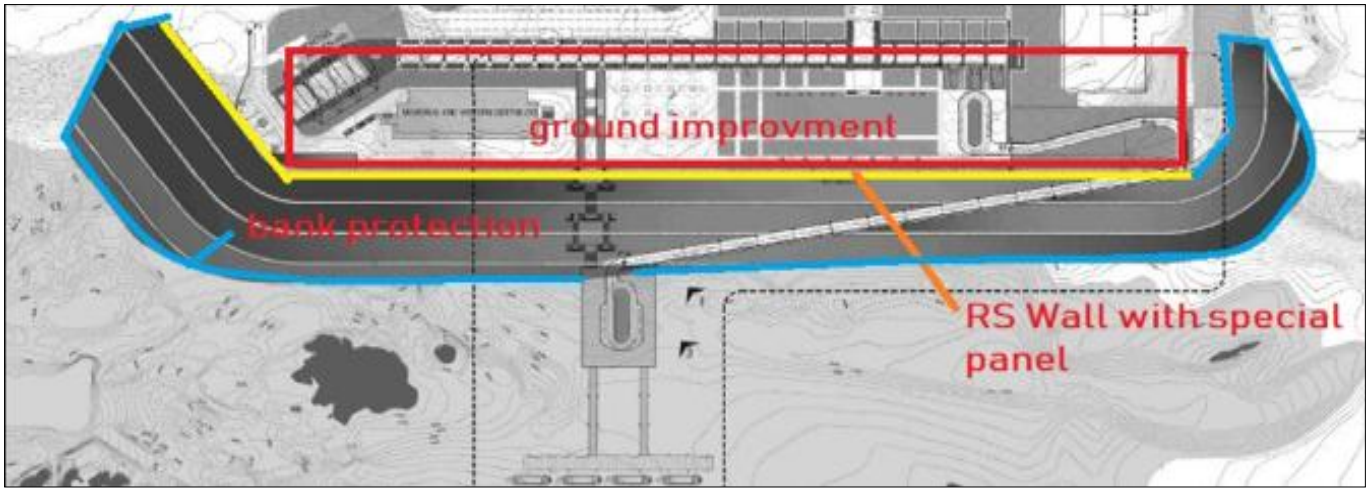
RS Wall & Slope Protection

Client:	Products used:
SARDAR SAROVAR NARMADA NIGAM LIMITED	• TECHFAB METAL GABION MATTRESS - ZINC+PVC COATED • TECHGRID BIAXIAL GEOGRID - HIGH STRENGTH BIAXIAL GEOGRID • TECHGRID UNIAXIAL GEOGRID - VARIOUS GRADES OF UNIAXIAL GEOGRID • TECHGEO PR SERIES - NONWOVEN POLYPROPYLENE GEOTEXTILE
Main contractor:	
L&T CONSTRUCTION, BUILDINGS & FACTORIES	
Manufacturer & Supplier:	
TECHFAB (INDIA) INDUSTRIES LTD.	
Year of construction:	
2019	

Project Description:

The Statue of Unity, the dream project of the honourable Prime Minister of India, is a colossal statue of '*The Iron Man of India*', Sardar Vallabhbhai Patel. It is the world's tallest statue with a height of 182 metres and is located on a river island facing the Sardar Sarovar Dam on the river Narmada in Kevadiya colony, Gujarat.

Techfab India Industries Ltd. is proud to participate in the making of history – as a Technology Provider and Supplier of Techgrid Geogrid & TechFab Metal Gabion Mattress for the project. The statue was inaugurated by honourable Prime Minister of India on 31st October 2018, the 143rd anniversary of Vallabhbhai Patel's birth.

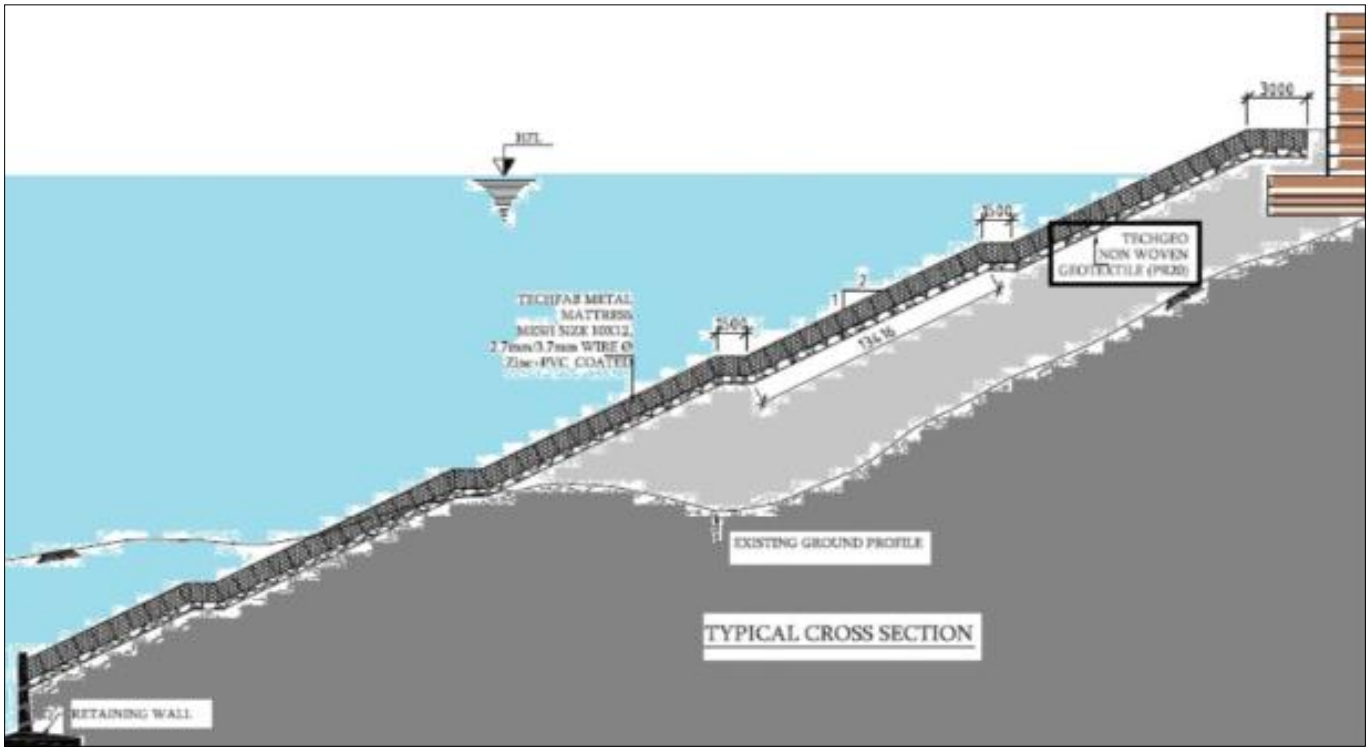


Areas of Applications:

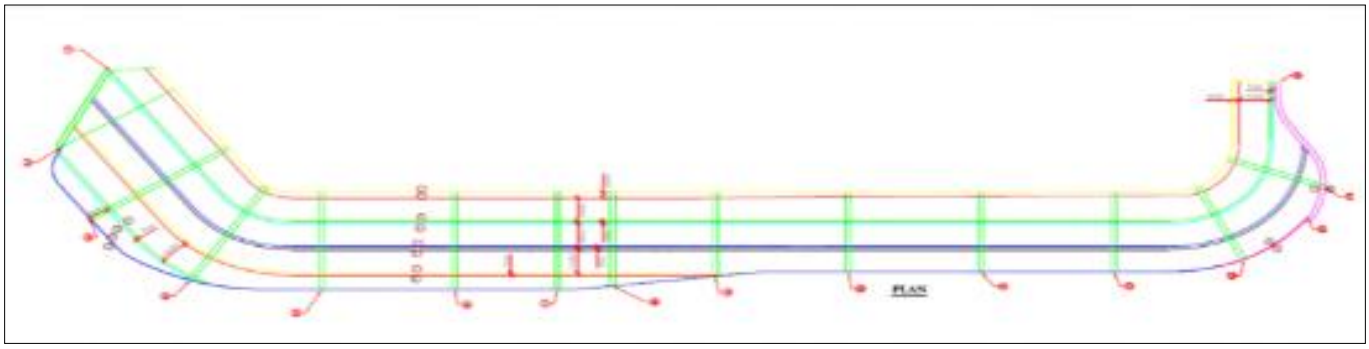
A. Slope Protection works
B. Ground Improvement Works
C. Reinforced Soil Wall Works

A. Slope Protection Works

- Memorial and Visitors Centre (M&VC Area) is located on nearest river bank side. The 'platform' for M&VC structures and other amenities including large landscape works was created on top of river bank with the help of gentle and stable slope from the river bed level.
- The level of M&VC base / platform was kept above HFL. The ramp may come in submerged condition when the water is discharged from dam. Hence, it is susceptible to erosion at large scale considering the proximity of the dam and the discharge caring capacity of the river.
- In order to protect the ramp, slope protection works consisting of TechFab Metal Gabion Mattress along with Techgeo Nonwoven Geotextile were proposed and adopted.
- TechFab Metal Gabion Mattress, (10x12, 2.7mm/3.7mm wire ø, Zinc+PVC Coated) of 1.0m thickness were used on the ramp having slope 1:2 with few intermediate berms.
- Techgeo nonwoven geotextiles are manufactured from high quality polypropylene staple fibres for durability. It is used for separation, filtration & drainage function below TechFab Metal Gabion Mattress.
- Project specific construction methodology was prepared and submitted in addition to detailed drawings for the proper execution and performance of the system.



Typical section illustrating the application of TechFab Metal Gabion Mattress on Ramp



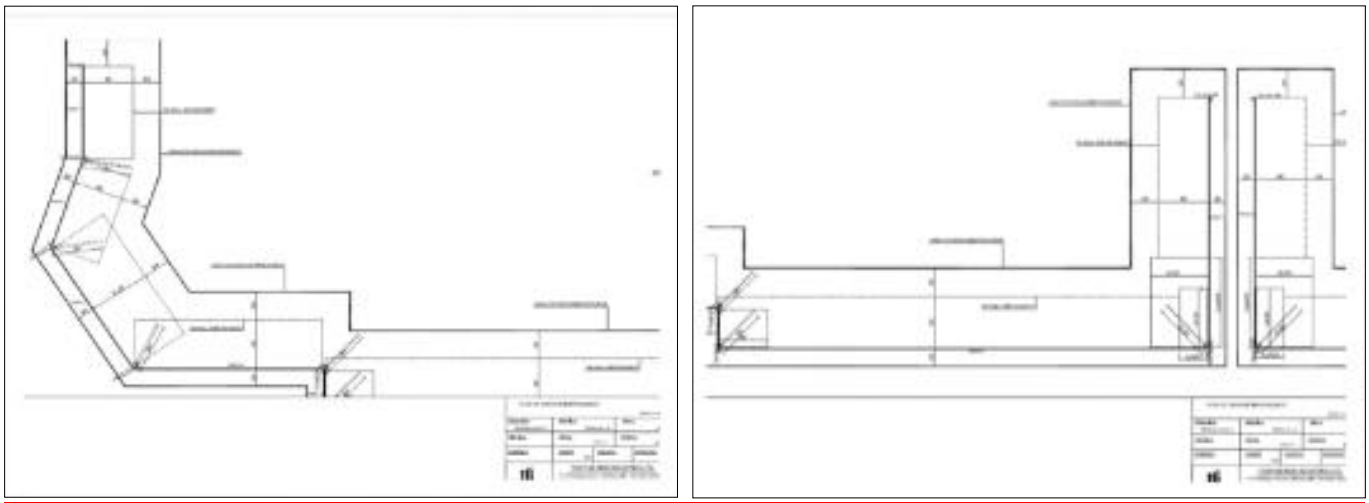
Plan details illustrating the application area of TechFab Metal Gabion Mattress

TechFab Metal Gabion Mattress laying in progress

TechFab Metal Gabion Mattress - Panoramic View

B. Ground Improvement Works

- The Memorial and Visitors Centre and other structures are to be built on reinforced soil walls all around the area. The reinforced soil walls were positions mostly over 'filled up' space created along with stable ramp. Hence, ground improvement was warranted.
- The ramp was created by compacting the soil in number of layers to ensure proper stiffness of the sloped area. Although, to minimize settlement, layers of Techgrid geogrid are considered as subgrade stabilization.
- Ground improvement in the form of three layers of Techgrid Biaxial Geogrid was proposed. TechGrid Biaxial series comprise biaxial geogrids manufactured from select grades of high tenacity, high molecular weight, and low carboxyl end group polyester yarn to ensure high strength, low creep and excellent durability.
- The three layers were laid with 500mm vertical spacing between each layer and were extended 3.0m and 5.0m in front and back respectively beyond the design reinforcement length of the reinforcement soil walls to be built over the area.

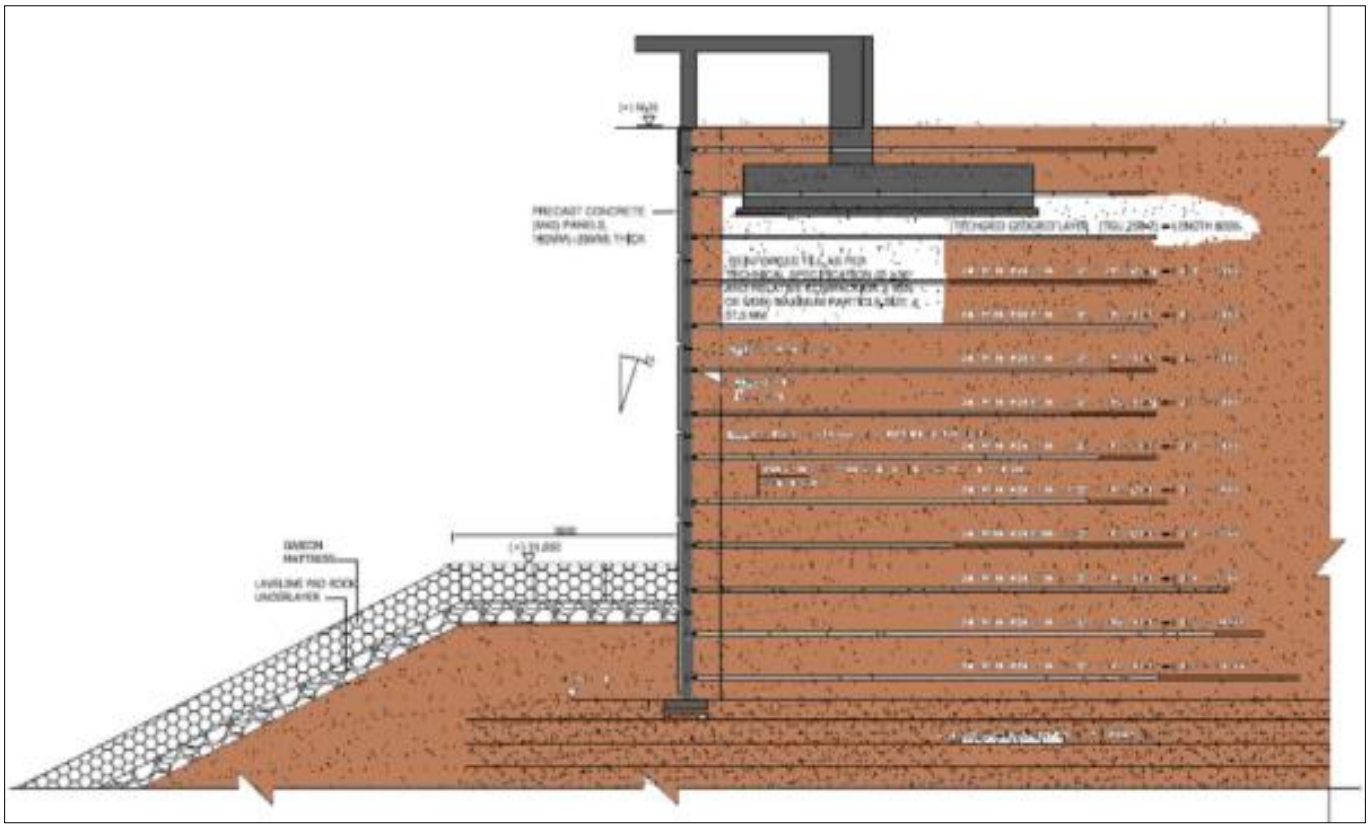


Plan Drawings for Ground Improvement with TechGrid Geogrid

Laying of TechGrid Geogrid in Progress

C. Reinforced Soil Wall Works

- The foundation level decided for M&VC buildings were around 8.0m higher than the ramp top level. Hence, Reinforced Soil walls of required heights were proposed and adopted for the upliftment of the entire area to the desire level. Reinforced soil walls with Techgrid geogrid & panel facing was adopted due to its obvious technical and commercial advantages over any other system.
- Client had proposed specially customized size panels for the project due to aesthetic requirements. TechFab India had designed the panels and provided drawings for the same, matching client's unique requirement.
- Various grades of TGU were used as reinforcement as per design carried out for various locations and various loading conditions. TechGrid U series are uniaxial knitted polyester geogrids with a protective polymeric coating engineered for demanding soil reinforcement applications. TechGrids are manufactured from select grades of high tenacity polyester yarn with molecular weight > 25,000 and carboxyl end groups < 30, to ensure high strength, low creep and excellent durability.
- For RS Wall applications too, project specific construction manual was prepared and submitted.

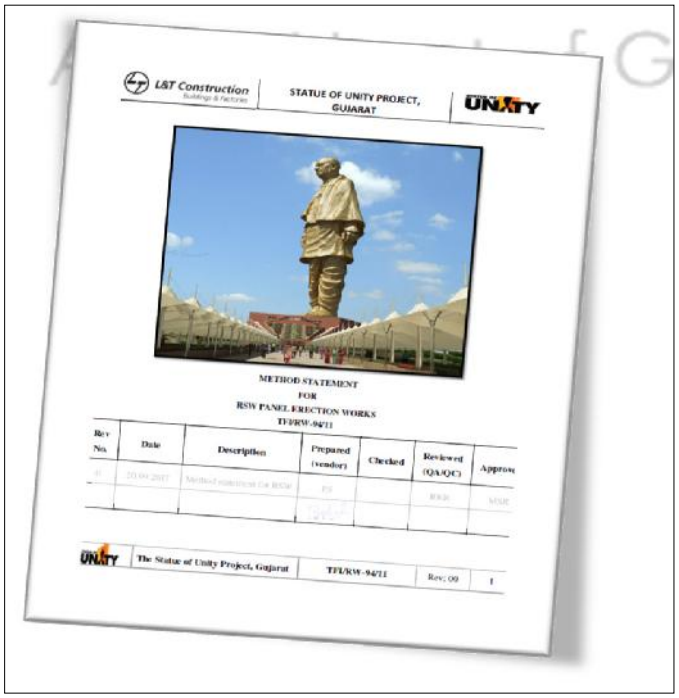


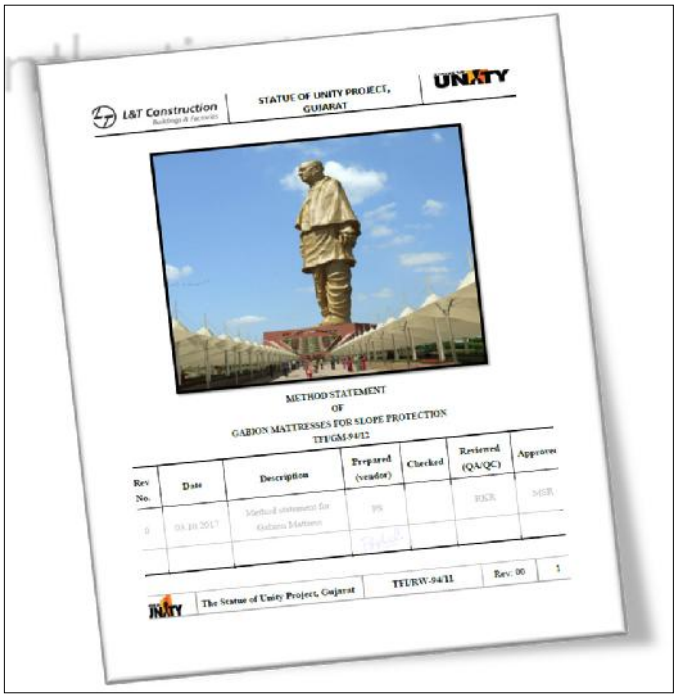
Typical Section of Reinforced Soil Wall along with Ground Improvement for Foundation

Marking in progress for RS Walls

Geogrid Laying for RS Walls

Finished view of RS Wall Panels





Project specific Construction Methodology for Reinforced Soil Walls and Gabion Mattress Installation

Panoramic View of TechFab products in the vicinity of Sardar Sarovar Dam

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